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ABSTRACT

This dissertation synopsis examines the relationship of school size to the achievement of students of varying levels of socioeconomic status in West Virginia and investigates motives for consolidation in this mostly rural state. To control for varying grade-span configurations, size (of school and district) was defined as enrollment per grade level in 1990. Other data included percentage of students receiving free and reduced-price meals; percentage of adults in each county district with less than 12th-grade education; and Comprehensive Test of Basic Skills scores for grades 3, 6, 9, and 11. Multivariate analyses, both at school and district levels, revealed a consistent, statistically significant interaction that replicated results of a similar 1988 California study. Results indicate that in 1990, before the onset of state-enforced consolidation, small schools and districts enhanced the achievement of poor students in West Virginia, whereas large schools and districts enhanced the achievement of affluent students. The negative effects of large size among impoverished schools and districts were twice the magnitude of positive effects of large size for affluent schools and districts. Negative effect sizes were larger at higher grade levels. Drawing on such critical theorists as Eagleton and Habermas, a critique of political economic circumstances in the late 1980s suggests that a crisis of legitimation led the State to take forceful action to restore public confidence, especially the confidence of influential corporations. School consolidation in the name of improved educational efficiency was the rigorous action undertaken. As a result, small schools closed widely, and a disproportionate net loss of schools was suffered in rural locales and less affluent communities. (SV)

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SIZING UP SCHOOLING: A WEST VIRGINIA ANALYSIS AND CRITIQUE

DISSERTATION

(Synopsis, 10 pp.)

Submitted to the College of Human Resources and Education

of

West Virginia University

In Partial Fulfillment of the Requirements for

The Degree of Education Doctor

by

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Morgantown

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SIZING UP SCHOOLING: A WEST VIRGINIA ANALYSIS AND CRITIQUE

Problem Statement and Research Questions

Large schools present difficulties in terms of both student engagement and organizational culture that smaller schools seem better able to avoid (Fowler, 1992). Not much is known, however, of the relationship of school size and achievement in particular states (Huang & Howley, 1993). Of particular concern is the effect of rural school consolidation on the achievement of impoverished (or "at-risk") students. This dissertation examined the relationship of school size to the achievement of students of varying levels of socioeconomic status in West Virginia and investigated the motives for consolidation in this mostly rural state.

In order to address the related research questions (i.e., What is the relationship of school and district size to achievement in West Virginia? and Why did the State seek to close schools?), the study took two rather distinct approaches. First, it tested a conceptually derived statistical model presented in a widely cited, but not previously replicated study (Friedkin & Necochea, 1988). Second, the study developed a critique of the political economic circumstances that led the State to enforce consolidation; the critique was specifically developed in light of the statistical findings. Included in this critique was an analysis that confirmed a disproportionate withdrawal of schools from rural areas in West Virginia.

The conceptual framework for this combination of statistical analysis and critique derives generally from the work of such critical theorists as Terry Eagleton (1991) and Jurgen Habermas (e.g., Habermas, 1984). More particularly, however, Brian Fay (1987) describes a "critical social science" that is simultaneously disinterested--in the sense of providing valid and reliable public evidence--and "interested" in the sense that it clearly articulates an interest in justice, an interest that constitutes a defensible motive for responsible critique.

A New View of the Related Literature

Ellwood Cubberley (Columbia University Teachers College) and Joseph Kennedy (University of North Dakota) present views that characterize urban and rural dilemmas of size as they existed circa 1915. Whereas Cubberley viewed scientific management and efficiency as contingent on increasing the size of schools, Kennedy understood curriculum and instructional success as not directly relevant to size. Kennedy believed that if the essentials of good climate, pedagogy, and community identity existed, a school needed to be no larger than 20 or 30 students. This contrast embodies not only a contest between efficiency and effectiveness, but one between urban and rural prerogatives that is salient into the contemporary era.

In the 1980s and 1990s interest in small schools per se has increased, perhaps because of the evident problems associated with large urban schools. The tendency in some of these recent studies is to regard size (and small size in particular) not as a correlate of effectiveness nor as a container of more interesting processes, but as a structural phenomenon. The structural view takes small size as a durable and influential condition. Researchers who take small size in this light are, like the urban educator Deborah Meier (1995), very reluctant to attribute to "schools-within-schools" or "house plans" the advantages structurally inherent in small schools. The structural features of smallness, in this view, are not easily simulated in large schools through administrative policies. Administrative separateness--leadership, budget, staff, climate--results from structural separateness.

Achievement studies related to small size in the contemporary period develop three related lines of evidence to affirm the value of small schools. This study contributes to the third of these three related lines of evidence. First, an empirically conservative line of evidence tends to confirm a null hypothesis. This approach is consistent with insights from previous output studies (most earlier work had focused on input studies). Second, Herbert Walberg and colleagues, following up on school effectiveness findings with a more structural view of size (e.g., Walberg & Fowler, 1987), found distinct achievement and

fiscal advantages to smallness when analyzing urban data sets and imposing controls for socioeconomic status (SES). Finally, a number of researchers have defined an emerging line of evidence that describes an interaction of size with SES that seems to regulate achievement. Contributors to this line include Baird (1969), Bidwell and Kasarda (1975), Friedkin and Necochea (1988), and Huang and Howley (1993). The most elegant statement was provided by Friedkin and Necochea (1988), in an analysis that employed California data. None of these studies involved an extended critique of consolidation as a strategy that increases school size, possibly to the detriment of the achievement of some students (for instance, those already most at risk of school failure).

Part I: Statistical Analysis

In the California study, larger size seemed to be associated with positive effects for affluent students, but not for impoverished students. The effects were the opposite for impoverished students: large size had a negative effect on achievement.

The California results were suggestive of a general principle, but the generalization of the California findings to more rural states or states with dramatically different histories, economies, ethnic makeup, and regulatory climate would be problematic. Would the same results be obtained in West Virginia? West Virginia would make a salient replication, both in view of its differences as compared to California and in view of the push for consolidation that had its greatest effects in West Virginia after 1990.

This study, following Friedkin and Necochea (1988), takes both schools and districts in West Virginia as units of analysis. In West Virginia, district is a key concern because West Virginia policy makers have repeatedly suggested that reorganizing the State's 55 county districts into fewer multi-county districts is desirable.

Size (of school and district) was defined as enrollment per grade level (a choice that serves to control for the variability of grade span configuration between schools in the school-level analyses); SES was

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defined as free and reduced-price meal rates (school- and district-level analyses), with percentage of adults with educational attainment less than twelfth grade an alternative measure of SES for the county level analyses; and achievement was defined as expanded-scale scores for the basic skills composite score on the Comprehensive Test of Basic Skills (CTBS) for four grade levels (3, 6, 9, and 11).

Size and meal subsidy data (SES) were extracted from the 1990 information reported in the Common Core of Data, published by the National Center for Education Statistics (NCES, 1994). Attainment data (the second SES measure used only in county-level analyses) were extracted from the National Center for Education Statistic's compilation of 1990 U.S. Census data, the School District Data Book (NCES, 1995). Achievement data were supplied by a staff member of the West Virginia Department of Education.

Method of Analysis. In order to assess whether an interaction with SES might characterize the relationship of school and district size in West Virginia, using a backward stepwise method, I regressed the achievement variable at all grade levels (in both school- and county-level analyses) on the independent variables. I began with the model specified by Friedkin and Necochea (SIZE + SES + Interaction Variable = Achievement). Prior to analysis, outliers were identified and removed from each grade-level data set. Parameters were set to leave variables in the equation at a significance level of $p<.05$.

Only equations significant at $F < .01$ were considered for the calculation of effect sizes to represent the magnitude of the relationship between size and achievement at varying levels of SES (following a technique pioneered by Friedkin and Necochea). This technique uses the regression equations to estimate the effect (of size on achievement) at varying levels of SES, in cases where statistically significant interaction effect is shown to exist.

Findings. Zero-order correlations of size and achievement, as expected were not statistically different from zero. The multivariate analyses, both at the school and district level, revealed a consistent

and statistically significant interaction effect that corroborated the California results. The effects were strongest at the district level, possibly because of weakness in the SES measure (meal subsidy data) at the school level. Friedkin and Necochea had had access to a more robust measure of SES for both school- and district-level analyses.

Two patterns of estimated effect sizes observable at both school and district levels are worthy of note. First, the magnitude of negative effects of large size among impoverished students are twice the magnitude of positive effects among affluent schools and districts; positive effect sizes among the affluent are not as large as negative effect sizes among impoverished schools and districts. Second, as grade level increases, the magnitude of effects increases; negative effect sizes are larger at higher grade levels, weaker at lower grade levels. The former pattern characterized the California results; the latter pattern is unique to the West Virginia results. Again, these patterns of effects are based on estimated effect sizes computed from the regression equations.

Actual relationships of SES and achievement with respect to school size, however, were also calculated in this study by dividing schools into large and small groups at the 6th and 11th grade levels. One would expect the correlation of achievement and SES to be weaker in small than in large schools, and this subsidiary analysis tested that proposition. This analysis provided a check on the estimated effects derived from the regression equations.

The means of all variables (dependent and independent) were calculated, and the zero-order correlation of achievement and SES was calculated. In large schools, SES accounted for about 25 percent of the variation in achievement test scores, whereas in small schools SES accounted for 1 to 4 percent of the variance. Mean achievement scores were nearly identical, but the smaller schools were much poorer, with subsidized meal rates 50 percent to 100 percent higher than in the large school groups. Restricted range was not a problem with the school groups thus constituted. The expectation that the correlation of achievement and SES would be substantially lower in small than in large schools proved accurate (cf. Huang & Howley, 1993).

Part II: Critique

The analysis of 1990 data clearly indicated that impoverished students in small schools were being served well. Further, the literature review showed that a research basis existed that ought to have served as a caution to policy makers, who were avowedly concerned to improve test scores. Indeed, the research had been shared with key state officials. The critique suggests that the motive for consolidation actually had little to do with education (in Joseph Kennedy's terms) and much more to do with high-level public administration generally--of which schooling is but a part, though a large one in terms of the share of the State budget in West Virginia.

The critique begins with an examination of the natural resource extraction basis of the State's economy and the prevalent patterns of land ownership and taxation. This examination leads to the conclusion that adequacy, rather than equity is the key issue for educational finance in West Virginia. Not only is West Virginia one of the most equitably funded of states (comparing districts), but education funds come predominantly from general revenues and not (as is widely supposed by the West Virginia public at large) from property taxes. Each year, local district superintendents do battle with the West Virginia legislature over the state funding formula. The aim is either to wrest very slight advantages from the existing pool of revenues or to fend off reductions. Adequacy either stays the same or declines; at best, funds are reallocated.

Taxes on lands held for speculation in natural resources by absentee, corporate owners (up to 70 percent of all lands) are assessed at one-fifth of the value of all owner-occupied residential property. Worse, coal production, though taxed, is taxed at the lowest rates where production is greatest. Resources exist to fund schools adequately, but the are controlled by organizations with little concern for educational adequacy for West Virginians. Needless to say, these organizations are politically quite active.

This circumstance is relevant to the case of consolidation because as the Governor Caperton (an insurance executive) took, office after the 1988 election, the previous administration was widely

perceived (especially by corporate interests) to have mismanaged the State's business. Tax increases for natural resource owners was a possible option, though not, of course, one favored by owners. Owners were inclined to view such a increase as requiring them to reward mismanagement. Education was another arena of possible action, since, as noted, education expenditures constituted about half the state budget. It was argued that improved efficiency would save the State money and also facilitate education reform; consolidation was a mainstay of the plans to improve educational efficiency. Teachers needed raises as well, and the West Virginia Education Association is a strong voice in the State legislature. Consolidation could provide the opportunity to reallocate wages through reductions-in-force.

The crisis of legitimation was deep. Scandalous mismanagement had depleted a major investment fund to the tune of $287 million; the outgoing governor had undertaken some shady dealings that were coming to light (he subsequently served time in prison); and the State was failing to pay its bills in a timely fashion (even tax refunds were delayed). Education, equitably funded with state revenues from the general fund, constituted over half the entire state budget. Education was a natural arena for a demonstration of the rigor needed to restor the legitimacy of the State--particularly the confidence of key corporate interests.

Consolidation was, in the end, the rigorous action chosen to demonstrate the will of the State and the new administration. The mechanism for accomplishing consolidation was to provide capital funds to financially-hard pressed local districts, under the aegis of a state school building authority (cf. Stephens, 1991). Local districts were to receive funds, however, only if their "comprehensive facilities plans" met arbitrary "economy of scale standards" invoked by the West Virginia School Building Authority (SBA). And it was the SBA itself that issued applicable guidelines and made all the funding decisions, largely in closed meetings. SBA staff and members described their work as "a mission."

Small schools closed widely as a result. Schools that existed in 1990 and that continued to exist in 1994 were about twice the size of those that closed. The schools that closed served less affluent communities, as well, but the average 1990 achievement test scores of the schools that closed were equal

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to scores in the more affluent schools that remained open.

The result of the SBA action, moreover, was to close proportionally more schools, and to open proportionally fewer, in rural locales. By contrast, fewer schools were closed and more were opened in the small and large towns that serve as the administrative centers of rural counties in West Virginia. Rural locales suffered a disproportionate net loss of schools among all types of locale. One way to paraphrase this observation is to say that educational services were systematically reduced in rural locales as a result of consolidation.

Education continues to constitute about half the state budget, but nearly 3,000 school employees lost their jobs. The salaries of West Virginia teachers moved up in the ranking of states. The gain, however, is temporary since no one knows where the funds to maintain the comparative ranks might come from. In the meantime, small schools are not likely to be reopened.

Conclusions

In 1990, small schools and districts were shown to enhance the achievement of impoverished students in West Virginia, whereas large schools and districts were shown to enhance the achievement of affluent students. These results confirm a line of evidence that suggests a role for SES in regulating the effects of school and district size, first put forward by Friedkin and Necochea (1988) in a California study. Similar results in West Virginia seem, however, to arise from a different set of circumstances than those prevailing in California. Whereas in the California study, many impoverished students were served (not well) in large urban schools, in West Virginia in 1990 many impoverished student were served (well) by small urban schools.

Many of these West Virginia schools were subsequently closed, with unknown but perhaps predictable results. The motive for closures was not civic-minded school improvement, but a crisis of legitimation that indicated the need for the State to take forceful action to restore public confidence, especially the confidence of the corporations exerting traditionally strong influence in the state. In 1996

confidence seems to have been restored, and the state has successfully brought a major auto manufacturer to a very rural area and is, as well, seeking to establish one of North America's largest pulp mills in another rural locale. Needless to say, tax breaks and new public works are among the incentives extended to these corporations.

Recommendations

This study suggested a number of extensions to address issues of practice, knowledge, and methodology. In the realm of practice, the study suggested the need to (1) develop strategies to retain small schools, especially for the benefit of impoverished students; (2) reconfigure large West Virginia county districts into smaller independent districts; and (3) form coalitions and information networks to defend the survival of small schools in rural areas and impoverished communities generally.

In the realm of substantive research questions, the most obvious call is for further state-based contributions to the interaction line-of-evidence promoted in this study. But there are a host of related issues that require study, such as: (1) ways in which small schools attach so-called "marginal students" more firmly to the life of the school than to large schools; (2) oral histories of consolidation and school closure; and (3) studies of the effect of closures on community viability. Methodological extensions would include examination of the issue of scale (district-school-classroom size), perhaps in a multi-level regression analysis (i.e., a hierarchical linear model).

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